Astronomy

4-3 The student will demonstrate an understanding of the properties, movements, and locations of objects in the solar system. (Earth Science)

4-3.3 Explain how the Sun affects Earth.
Taxonomy level: 2.7-B Understand Conceptual Knowledge

Previous/Future knowledge: In 1st grade (1-3.2), students recalled that the Sun is the source of heat and light for Earth but did not study the cause for this. In 8th grade (8-4.2,3), students will study the characteristics and features of the Sun more fully as it affects Earth including the effects of solar radiation, solar flares, and solar wind.

It is essential for students to know that the Sun as a star produces heat and light deep down inside of it.

- The Sun produces and gives off its own heat and light.
- Earth receives that heat and light after they travel through space.
- The Sun is the source of almost all energy on Earth:
- Plants take the Sun's energy and use it to make food energy.
- The Sun's energy causes weather conditions on Earth.
- Heat from the Sun causes the process of evaporation of water on Earth's surface.
- The Sun's energy is stored in fossil fuels (for example, coal, oil, or natural gas) that formed from some organisms that died long ago.

It is not essential for students to know the nuclear process that takes place so that the Sun can produce heat and light. They do not need to know the types of radiation that the Sun gives off.

Assessment Guidelines:
The objective of this indicator is to *explain* the effects that the Sun has on Earth; therefore, the primary focus of assessment should be to construct a cause-and-effect model of the various ways that Earth is affected by the Sun. However, appropriate assessments should also require students to *recall* that heat and light energy are given off by the Sun; or *exemplify* ways that the Sun's energy affects life on Earth.